

COURSE OUTLINE

(1) GENERAL

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| SCHOOL | SCHOOL OF SCIENCES | | |
| ACADEMIC UNIT | DEPARTMENT OF MATHEMATICS | | |
| LEVEL OF STUDIES | UNDERGRADUATE PROGRAM | | |
| COURSE CODE | | SEMESTER | E |
| COURSE TITLE | HYPERBOLIC GEOMETRY | | |
| INSTRUCTOR | | | |
| INDEPENDENT TEACHING ACTIVITIES | | WEEKLY TEACHING HOURS | CREDITS |
| | | 4 | 6 |
| COURSE TYPE | Specialised general knowledge | | |
| PREREQUISITE COURSES: | NO | | |
| LANGUAGE OF INSTRUCTION and EXAMINATIONS: | GREEK | | |
| IS THE COURSE OFFERED TO ERASMUS STUDENTS | YES | | |
| COURSE WEBSITE (URL) | http://www.math.aegean.gr/index.php/en/academics/undergraduate-programs | | |

(2) LEARNING OUTCOMES

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| Learning outcomes |
| Understanding of the basic properties of Hyperbolic Geometry. Moebius transformations and their classification. Ability to calculate hyperbolic length and area. Ability to apply the Gauss-Bonnet theorem in order to be able to construct polygons in hyperbolic space. Understanding the laws of hyperbolic trigonometry. |
| General Competences |
| Working independently. Team work. Working in an interdisciplinary environment. Search for analysis and synthesis of data and information. Production of free, creative and inductive thinking. |

(3) SYLLABUS

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| The hyperbolic plane H , Riemann sphere, boundary at infinity of hyperbolic plane. The group of Moebius transformations, transitive properties, classification, reflections, invariance of H . Geometry of the action of $Mob(H)$. Distance and length in H , curvature, hyperbolic polygons, hyperbolic area, Gauss-Bonnet formula. | |
| TEACHING MATERIAL DISTRIBUTION | The teaching material of the course is uniformly distributed during the semester. |

(4) TEACHING and LEARNING METHODS - EVALUATION

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| DELIVERY | Face-to-face | |
| USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY | Communication with students via e-mail | |
| TEACHING METHODS | Activity | Semester workload |
| | Lectures | 52 |
| | Independent study | 98 |
| | Course total (25 per ECTS) | 150 |
| COURSE COMMITMENTS | Attending course is not obligatory. | |

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| STUDENT PERFORMANCE EVALUATION | Student's evaluation is done in Greek through a written examination which includes short-answers questions and problem solving. For students with disabilities, evaluation takes place via oral exams. |
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(5) ATTACHED BIBLIOGRAPHY

1. Hyperbolic Geometry, James E. Anderson.